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### THE INFORMATION SOCIETY AND THE INFORMATION ECONOMY IN AUSTRALIA

#### INTRODUCTION

Over recent years, Australians have become increasingly aware of the rapid advances in information and telecommunications technology and of the ways in which this has impacted on our society and economy.

Digital technology has created inextricable links between telecommunications and computing technologies, transforming the ways in which information is exchanged and accessed. It has influenced the ways in which business is conducted, and how governments and their instrumentalities interact with the business community and society generally. Personal computers and the Internet are increasingly contributing to social and economic change.

The terms 'information society' and 'information economy' have been in common use for some time and are generally taken to relate to these phenomena. The term 'information society' is mainly used to refer to the diffusion of these technologies throughout the community (business, government and households), and the term 'information economy' relates to the flow of information between economic units, the transactions that take place, and the benefits resulting from these transactions and information flows.

This article presents selected statistics relating to the information society and the information economy. It looks first at the Information and Communications Technologies (ICT) sector, which is the part of the economy that produces information and telecommunication goods and services, then it examines their use by businesses, farms and private individuals (there are no recent data for the government sector).

#### THE ICT SECTOR

The ICT sector in Australia includes telecommunication services, computer services, and selected manufacturing and wholesale trade industries. While some countries also include radio and TV services within the ICT sector, this has not been done in Australia. As explained in the Introduction to this section, radio and TV services are covered in **Culture and recreation**.

Table S6.1 provides statistics for a selection of industries considered to be the predominant contributors to the production and distribution of ICT goods and services. The table is based on ABS surveys conducted in respect of 1992-93 and 1995-96.

The scope and definitions for both surveys are broadly consistent. However, some of the apparent growth in the size of the industries between 1992-93 and 1995-96 stems from improvements in the coding and coverage of the relevant businesses. Although difficult to quantify precisely,

investigations suggest that these improvements contributed about 10% to the growth in income, expenses and pre-tax profit between the surveys.

In 1995-96, total income for the industries included in the ICT sector accounted for the following proportions of the total income of the sector:

- telecommunication services industry, 38% of total income;
- ICT businesses in the wholesale trade sector, 35%;
- computer services industry, 17%; and
- ICT businesses in the manufacturing sector, 10%.

The statistics shown are the most recent available; the ABS plans to survey the ICT sector next in respect of 1998-99.

### S6.1 INCOME AND EXPENSES, BUSINESSES IN THE ICT SECTOR

Industry	1992-93			1995-96		
	Total income \$m	Total expenses \$m	Operating profit before tax \$m	Total income \$m	Total expenses \$m	Operating profit before tax \$m
<b>Manufacturing</b>						
Computer and business machines	n.p.	n.p.	n.p.	1,934.5	1,910.0	90.5
Telecommunication, broadcasting and transceiving equipment	1,802.7	1,730.1	93.8	1,659.7	1,347.0	284.5
Electronic equipment n.e.c.	290.4	270.1	n.p.	99.1	97.5	*8.6
Electric cable and wire	412.3	316.4	124.3	1,072.5	1,040.0	53.7
Total	n.p.	n.p.	228.1	4,765.8	4,394.5	437.3
<b>Wholesale trade</b>						
Computers	4,931.5	4,828.5	167.1	12,254.9	11,741.5	581.2
Business machines and electrical and electronic equipment n.e.c.	n.p.	n.p.	n.p.	5,070.9	4,926.9	291.4
Total	n.p.	n.p.	n.p.	17,325.8	16,668.4	872.6
Telecommunication services	n.p.	n.p.	n.p.	18,733.7	15,933.6	2,781.5

Computer services	4,100.2	3,749.0	364.9	8,087.8	7,640.9	455.3
<b>Total</b>	<b>27,448.5</b>	<b>24,830.3</b>	<b>2,665.1</b>	<b>48,913.1</b>	<b>44,637.4</b>	<b>4,546.7</b>

## Business use of information technology

The ABS has measured the use of computers and Internet access among businesses for June 1994 and June 1997. Both surveys excluded non-employing businesses and farms.

The proportion of employing businesses using computers increased from 49% in June 1994 to 63% in June 1997. While all large businesses (200 or more employees) and 94% of medium sized businesses (20-199 employees) used computers, the proportion for all small businesses (less than 20 employees) was 60%, and for 'micro' businesses (less than five employees) 56%.

One in three businesses had used computers for five years or more, and one in ten had used them for less than two years.

About 21% of all businesses had Internet access at June 1997 (table S6.2), though this varied by size of business: 85% of large businesses, 49% of medium sized businesses, 19% of small businesses, and 17% of micro businesses had Internet access.

About 5% of businesses had a web-site/home page at June 1997.

At June 1997, the main uses of the Internet were email (by 20% of businesses with Internet access) and information gathering (by 18%).

Only 1% of businesses used the Internet for selling or purchasing goods or services, indicating that Internet commerce by businesses is still very small. It currently comprises a small proportion of all electronic commerce in Australia. The number of electronic commerce transactions is large; in 1997 there were 1.5 billion such transactions in Australia. Their value was about \$16,000b, the bulk of which related to payments and clearances (valued at \$15,300b). There were 500 million EFTPOS transactions, with a total value of \$27.5b and an average value of \$55, and 600 million direct entry transactions, with a total value of \$540b and an average value of \$900. Consumer Internet transactions were valued at about \$55m.

## S6.2 PROPORTION OF BUSINESSES USING THE INTERNET, By Size of Business - June 1997

	Micro %	Other small %	Total small %	Medium %	Large %	All %
Businesses with access to Internet	17	24	19	49	85	21
Businesses with web site/home page	2	7	3	18	50	5
<b>Major uses of the Internet</b>						
Email	15	23	18	48	79	20

Gathering information	14	20	16	43	79	18
Data transfer	8	9	8	17	44	9
Marketing	2	7	4	16	33	5
Selling	1	2	1	3	2	1
Purchasing	1	0	1	1	3	1
Voice/video communication	0	0	0	0	1	0

Source: Small and Medium Enterprises, Business Growth and Performance Survey, Australia (8141.0)

While the ABS business surveys did not measure the proportion of employees using computers or accessing the Internet, or their intensity of use, ABS surveys of households (discussed below) have measured the number of adults (persons aged 18 or over) who said they had used a computer or accessed the Internet at work. In summary, in the 12 months to March 1998:

- about 4.3 million adults used computers at work (52% of employed adults); and
- about 1.4 million adults accessed the Internet at work (17% of employed adults).

### Farm use of information technology

The ABS's Agricultural Commodity Survey estimated that 45% of farms had a computer at March 1998 (table S6.3). This was almost identical to the proportion for capital city households (46%), but was significantly greater than for all other households (36%). (The latter category comprises farm households and households in regional and rural towns.)

### S6.3 HOUSEHOLDS AND FARMS WITH A COMPUTER, By State/Territory - 1998

Region	NSW %	Vic. %	Qld %	SA %	WA %	Tas. %	NT %	ACT %	Aust. %
Capital city households(a)	45.7	46.4	48.8	42.0	42.3	38.0	45.6	65.1	45.9
Other households(a) (b)	34.9	39.2	37.3	32.3	40.6	29.1	44.2	n.a.	36.4
Total Farms(c)	41.4	44.3	42.4	39.4	41.9	32.8	45.1	65.1	42.4
	45.7	42.3	41.4	47.8	53.4	41.1	55.7	59.4	44.8

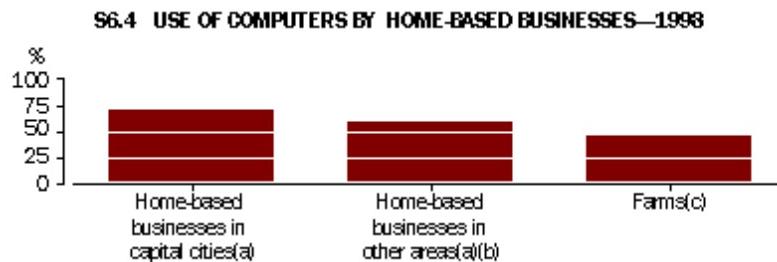
(a) Estimates sourced from household surveys in February and May 1998.

(b) Farm households and households in regional and rural towns. Given the small sample size of the household surveys on which the estimates are based, it is not possible to dissect them further.

(c) Estimates are sourced from the Agricultural Commodity Survey, reference period March 1998.

Source: Household Use of Information Technology, Australia (8146.0); and unpublished data, Agricultural Commodity Survey.

Since farms generally comprise both households and businesses, they may be compared to households with a home-based business. While 45% of farms had computer access, the corresponding figures were 66% for all Australian home-based businesses, 70% for capital city home-based businesses, and 59% for home-based businesses in all other areas (graph S6.4).



(a) Based on household surveys conducted in February and May 1998. (b) Farm households and households with a home-based business in rural towns. (c) Farm businesses are a subset of home-based businesses outside capital cities. Data sourced from the Agricultural Commodity Survey, reference period March 1998.

Source: Household Use of Information Technology, Australia (8146.0); and unpublished data, Agricultural Commodity Survey.

Nearly 12% of farms were connected to the Internet at March 1998 (table S6.5 and graph S6.6). This compares with:

- 14% of all Australian households, and 27% of all home-based businesses;
- 17% of capital city households, and 35% of capital city home-based businesses; and
- 8% of households in all other areas and 14% of home-based businesses in all other areas.

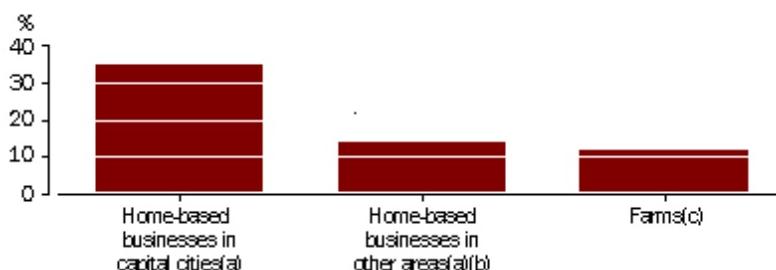
### S6.5 HOUSEHOLDS AND FARMS WITH INTERNET ACCESS, By State/Territory - 1998

Region	NSW %	Vic. %	Qld %	SA %	WA %	Tas. %	NT %	ACT %	Aust. %
Capital city households(a)	20.3	16.1	15.7	11.6	13.9	12.7	15.0	26.6	16.9
Other households(a) (b)	7.8	8.2	8.3	6.5	5.6	4.7	10.8	n.a.	7.7
Total	15.4	13.9	11.6	10.2	11.8	8.0	13.6	26.6	13.5
Farms(c)	13.2	10.6	11.2	13.0	10.2	13.0	23.6	20.3	11.8

(a) Estimates sourced from household surveys in February and May 1998.

(b) Farm households and households in regional and rural towns. Given the small sample size of the household surveys on which the estimates are based, it is not possible to dissect them further.

### S6.6 HOME-BASED BUSINESSES WITH INTERNET ACCESS—1998



(a) Based on household surveys conducted in the period February and May 1998. (b) Farm households and households with a home-based business in rural towns. (c) Farm businesses are a subset of home-based businesses outside capital cities. Data sourced from the Agricultural Commodity Survey, reference period March 1998.

Source: *Household Use of Information Technology, Australia (8146.0)*; and unpublished data, Agricultural Commodity Survey.

## Household use of information technology

The main dimensions of household use of information technology relate to the number of households with computers, the extent of use of computers at home, and the number of households accessing the Internet from home.

### Computer use

The statistics relating to households are an average of the results from surveys in February and May 1998 (the surveys were combined to increase their reliability).

As table 6.3 showed, about 42% of households had computers, comprising 46% of capital city households and 36% of other households. Table S6.7 shows the distribution by State/Territory and capital city/other. The ACT had by far the highest penetration rate (65%) and Tasmania the lowest (33%).

### S6.7 HOUSEHOLDS WITH A COMPUTER, By State/Territory - 1998

State/Territory	Region	Other	Total
	Capital cities		
NSW	45.7	34.9	41.4
Vic.	46.4	39.2	44.3
Qld	48.8	37.3	42.4
SA	42.0	32.3	39.4
WA	42.3	40.6	41.9
Tas.	38.0	29.1	32.8
NT	45.6	44.2	45.1

ACT	65.1	n.a.	65.1
Aust.	<b>45.9</b>	<b>36.4</b>	<b>42.4</b>

Source: Household Use of Information Technology, Australia (8146.0).

About 36% of households used a computer frequently (i.e. once a week or more). This proportion was relatively consistent across the States and Territories, except for the ACT (56%) and Tasmania (26%) (table 6.8).

Between the corresponding periods in 1996 and 1998, the proportion of households frequently using a computer increased by about 18%. This increase was relatively consistent across the States and Territories

#### S6.8 HOUSEHOLDS FREQUENTLY(a) USING A COMPUTER, By State/Territory

State/Territory	'000	February, May 1998	February, May 1996
		%	%
NSW	792	35.0	30.8
Vic.	642	38.2	31.5
Qld	440	34.6	29.0
SA	194	34.1	30.0
WA	229	35.1	27.7
Tas.	49	26.2	23.3
NT	*19	*41.2	*37.4
ACT	62	55.6	48.5
Aust.	<b>2,425</b>	<b>35.8</b>	<b>30.4</b>

(a) Once a week or more.

Source: Household Use of Information Technology, Australia (8146.0).

About 6% of households had a computer but did not use it frequently. This rate was also reasonably consistent across the States and Territories.

#### Internet access

As table S6.5 indicated, 14% of Australian households had home Internet access. Again the ACT had the highest penetration rate (27%, nearly double the Australian average) and Tasmania the lowest (8%) (table 6.9).

### S6.9 HOUSEHOLDS ACCESSING THE INTERNET FROM HOME, By State/Territory - 1998

State/Territory	'000,	%
NSW	347	15.4
Vic.	233	13.9
QLD	147	11.6
SA	58	10.2
WA	77	11.8
Tas.	*15	*8.0
NT	*6	*13.6
ACT	30	26.6
<b>Aust.</b>	<b>913</b>	<b>13.5</b>

Source: Household Use of Information Technology, Australia (8146.0)

As table S6.10 shows, in all States the proportion of households with Internet access was significantly higher in capital cities (17%) than elsewhere (8%).

### S6.10 HOUSEHOLDS WITH HOME INTERNET ACCESS, By State/Territory - 1998

State/Territory	Region		Australia %
	Capital cities %	Other %	
NSW	20.3	7.8	15.4
Vic.	16.1	8.2	13.9
Qld	15.7	8.3	11.6
SA	11.6	6.5	10.2
WA	13.9	5.6	11.8
Tas.	12.7	4.7	8.0

NT	15.0	10.8	13.6
ACT	26.6	n.a.	26.6
<b>Aust.</b>	<b>16.9</b>	<b>7.7</b>	<b>13.5</b>

Source: Household Use of Information Technology, Australia (8146.0).

Of households with computers, 68% did not access the Internet. Of the reasons given by households with computers for not accessing the Internet, the main ones were 'costs are too high' (31%), 'lack of interest in Internet' (27%) and 'other' (23%) which included 'lack of access to Internet service provider' and 'inadequate telecommunications infrastructure' (table S6.11).

#### S6.11 MAIN REASONS FOR HOUSEHOLDS WITH COMPUTERS NOT HAVING HOME INTERNET ACCESS, By State/Territory - 1998

State/ Territory	Costs are too high	Lack of	Insufficient	Adequate	Other	Don't know	Total
	%	%	%	%	%	%	%
NSW	28.7	28.4	11.9	5.8	24.5	*0.8	100.0
Vic.	30.5	29.7	7.4	7.2	23.1	*2.1	100.0
Qld	30.1	27.5	9.7	7.8	21.2	*3.7	100.0
SA	36.2	24.6	9.0	*6.3	21.8	*2.2	100.0
WA	33.1	22.1	13.5	*5.8	23.9	*1.6	100.0
Tas.	*29.9	*23.1	*11.8	*12.8	*19.9	*2.6	100.0
NT	*32.1	*25.4	*14.1	*11.9	*15.8	*0.9	100.0
ACT	*28.9	*26.2	*10.9	*15.3	*18.2	*0.7	100.0
<b>Aust.</b>	<b>30.6</b>	<b>27.4</b>	<b>10.2</b>	<b>7.0</b>	<b>22.9</b>	<b>2.0</b>	<b>100.0</b>

Source: Household Use of Information Technology, Australia (8146.0).

Possession of a modem by households, as distinct from their accessing of the Internet, was measured in both 1996 and 1998 (Internet access was not measured in a comparable way between the 1996 and 1998 surveys). Table S6.12 shows that the proportion of households with a modem, and which frequently used a computer, doubled between 1996 and 1998. Nearly half of the 2.4 million households frequently using a computer in 1998 also had a modem.

#### S6.12 HOUSEHOLDS WITH MODEMS(a), By State/Territory

State/Territory	'000	1998	1996
		%	%
NSW	430	54.3	26.7
Vic.	291	45.3	22.0
Qld	192	43.6	23.6
SA	83	42.9	22.2
WA	107	46.8	26.2
Tas.	*20	*42.6	*11.8
NT	*9	*46.3	*24.6
ACT	36	57.9	31.1
<b>Aust.</b>	<b>1,168</b>	<b>48.2</b>	<b>24.3</b>

(a) Relates only to households frequently using a computer.

Source: Household Use of Information Technology, Australia (8146.0).

## Persons using computers and the Internet

This section summarises some of the main characteristics of persons who use a computer, namely the number of adults (persons aged 18 and over) accessing computers from home and from work, and the age distribution of persons frequently using a home computer and of those accessing the Internet from home.

The statistics are again an average of the results from the February and May 1998 surveys.

More than 7.6 million adults (57% of the total adult population) accessed a computer from any site in the previous twelve months, 4.6 million accessing from home, and 4.3 million from work (table S6.13). Just over a million people accessed the Internet from the house of a neighbour or friend, a public library or a TAFE or some other tertiary institution.

More than 3.3 million adults accessed the Internet from any site in the same period. There was a slightly greater number of adults using the Internet from work than from home (1.4 million compared to 1.3 million). Over 0.8 million adults accessed from the house of a neighbour or friend and 0.6 million from a TAFE or other tertiary institution.

About 5.2 million adults (62% of employed Australians) used computers for work purposes, either at work or from home. (This estimate is derived by adding to the 4.3 million adults who used computers at work from table S6.13, a further 2.5 million adults who used a computer at home for work related purposes, and adjusting for overlap. A complementary estimate for Internet use is not yet available.

### S6.13 ADULTS ACCESSING A COMPUTER OR THE INTERNET(a)(b), By State/Territory

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
<b>ACCESSING A COMPUTER</b>									
	'000	'000	'000	'000	'000	'000	'000	'000	'000
Home	1,524	1,247	824	348	431	88	*35	121	4,618
Work	1,475	1,068	775	291	468	105	*47	111	4,339
Neighbour or friend's house	290	329	166	101	117	*27	*7	*32	1,068
Public library	445	368	256	120	118	*28	*11	*40	1,387
TAFE/tertiary institution	461	297	276	97	142	*33	*10	*32	1,348
Other	300	412	2,445	109	119	*50	*14	*39	1,288
<b>Any site(c)</b>	<b>2,478</b>	<b>1,957</b>	<b>1,420</b>	<b>580</b>	<b>784</b>	<b>179</b>	<b>65</b>	<b>167</b>	<b>7,630</b>
	%	%	%	%	%	%	%	%	%
Home	33.3	36.9	33.6	31.9	33.9	26.0	*38.6	55.9	34.4
Work	32.3	31.6	31.6	26.7	36.8	30.9	*52.1	51.1	32.3
Neighbour or friend's house	6.3	9.7	6.7	9.2	9.2	*8.0	*8.2	*14.8	8.0
Public library	9.7	10.9	10.4	11.0	9.3	*8.3	*12.7	*18.5	10.3
TAFE/tertiary institution	10.1	8.8	11.3	8.9	11.2	*9.7	*10.6	*14.8	10.1
Other	6.6	12.2	10.0	10.0	9.4	*14.7	*15.7	*17.8	9.6
<b>Any site(c)</b>	<b>54.2</b>	<b>57.9</b>	<b>57.8</b>	<b>53.2</b>	<b>61.8</b>	<b>52.9</b>	<b>72.1</b>	<b>76.9</b>	<b>56.9</b>
<b>ACCESSING THE INTERNET</b>									
	'000	'000	'000	'000	'000	'000	'000	'000	'000
Home	490	343	206	65	113	*19	*10	*46	1,292
Work	501	341	234	89	137	*42	*17	66	1,427
Neighbour or friend's house	231	247	135	72	112	*20	*6	*25	848
Public library	106	87	66	*17	*26	*9	*2	*16	330
TAFE/tertiary institution	256	149	110	*35	53	*15	*5	*22	644
Other	116	127	72	*41	*33	*16	*3	*16	425
<b>Any site(c)</b>	<b>1,138</b>	<b>903</b>	<b>545</b>	<b>217</b>	<b>325</b>	<b>77</b>	<b>*29</b>	<b>115</b>	<b>3,348</b>
	%	%	%	%	%	%	%	%	%
Home	10.7	10.1	8.4	5.9	8.9	*5.7	*11.3	*21.3	9.6
Work	10.9	10.1	9.5	8.2	10.8	*12.4	*18.9	30.6	10.6
Neighbour or friend's house	5.1	7.3	5.5	6.6	8.8	*5.9	*6.5	*11.6	6.3
Public library	2.3	2.6	2.7	*1.5	*2.1	*2.7	*2.2	*7.5	2.5
TAFE/tertiary institution	5.6	4.4	4.5	*3.2	4.1	*4.3	*5.5	*10.2	4.8
Other	2.5	3.8	3.0	*3.8	*2.6	*4.9	*3.0	*7.3	3.2
<b>Any site(c)</b>	<b>24.9</b>	<b>26.7</b>	<b>22.2</b>	<b>19.9</b>	<b>25.6</b>	<b>22.7</b>	<b>*31.9</b>	<b>52.8</b>	<b>25.0</b>

(a) Period covers 12 months leading up to the surveys of February and May 1998.

(b) Proportions are of all persons 18 years and over.

(c) Because access can be from more than one site, the sums of the estimates for site categories exceed the estimates for 'any site'.

Source: Household Use of Information Technology, Australia (8146.0).

Averaging over the February and May 1998 surveys, nearly 5.2 million Australians aged 5 years and over frequently used a computer at home. This was 31% of the total population aged 5 years and over. The corresponding proportion in 1996 was 24% (table S6.14).

#### S6.14 PERSONS FREQUENTLY USING A HOME COMPUTER(a), By Age

Age	'000	1998	1996
		%	%
5-9 years	468	35.6	30.0
10-14 years	763	58.2	47.0
15-17 years	482	62.9	46.7
All children 5-17 years	1,714	50.5	40.3
18-24 years	634	35.0	28.3
25-39 years	1,307	31.0	22.9
40-54 years	1,220	32.1	25.4
55 years and over	303	8.5	7.2
All adults	3,464	25.8	20.2
<b>Total persons</b>	<b>5,178</b>	<b>30.8</b>	<b>24.0</b>

(a) Percentages are of all persons in each age group.

(b) Period covers the 12 months leading up to the surveys of February and May.

Source: Household Use of Information Technology, Australia (8146.0).

While two-thirds of the 5.2 million frequent home computer users were adults, a greater proportion of children used computers at home than did adults (50% compared to 26%). With increasing age, a greater proportion of children, but a smaller proportion of older adults, frequently used a computer.

Table S6.15 shows that 1.3 million frequent home computer users also accessed the Internet from home (8% of all persons 5 years and over). Of those, 257,000 were children aged 5 to 17 years. About 13% of children aged 15 to 17 years, and 12% of those aged 10 to 14 years, frequently used a home computer and accessed the Internet.

Over one million adults frequently used a computer and also accessed the Internet from home. Younger adults were more likely to use the Internet than older ones. Over 10% of adults aged between 18 and 39 years frequently used a home computer and accessed the Internet from home. However, only 2% of persons aged 55 years or more accessed the Internet from home.

The proportion of adults purchasing goods or services through the Internet is relatively small, although it doubled between the surveys of February and May 1998. In the period June 1997 to May 1998, 400,000 Australians aged 18 or over (3% of adults) used the Internet to make one or more private purchases. Three-quarters of the adults making Internet purchases paid for them online, and a similar proportion purchased them from overseas. There were about 1 million transactions for a total value of over \$50 million. (It should be noted that the number of transactions and their value were derived from range data, and are therefore subject to fairly high degrees of error.)

#### **S6.15 PERSONS FREQUENTLY USING A HOME COMPUTER AND ACCESSING THE INTERNET FROM HOME(a), By Age - 1998**

Age	'000	%
5-9 years	17	1.3
10-14 years	142	11.4
15-17 years	98	12.6
All children 5-17 years	257	7.8
18-24 years	191	10.3
25-39 years	421	10.1
40-54 years	332	9.3
55 years and over	63	1.8
All adults	1,007	7.7
<b>All persons</b>	<b>1,264</b>	<b>7.8</b>

(a) Percentages are of all persons in each age group, derived from the February and May surveys.

Source: Unpublished data, Household Use of Information Technology Survey.

#### **References**

#### **ABS publications**

**Household Use of Information Technology, Australia (8146.0).**

**Information Technology, Australia (8126.0).  
Small and Medium Enterprises, Business Growth and Performance Survey, Australia  
(8141.0).**

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